



# Mobile Document Camera Stand

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## PARTS:

- [10" 1/4"-20 allthread \(3\)](#)  
[\\$0.58 MC: 98790A320 \(12" rod\)](#)
- [1/4" Straight Tongue Copper Set Screw Terminal Lug \(4\)](#)  
[\\$2.04 ea. MC: 6923K62](#)
- [1/2" OD, .252" ID 1/2" Nylon Spacer \(2\)](#)  
[\\$0.64 ea. MC: 94729A215 \(10 pack\)](#)
- [1/4"-20 Wing Nuts \(2\)](#)  
[\\$0.33 ea. MC: 92001A321 \(25 pack\)](#)
- [10" .5" OD, .4" ID Aluminum Tubing \(2\)](#)  
[\\$2.94 ea. MC: 89965K253 \(36" length \\$8.81\)](#)
- [Threaded Stud Three Arm #15 1/4"-20 Plastic Clamping Knob \(2\)](#)  
[\\$1.70 ea. MC: 57715K78](#)
- [1/4" Internal Tooth Lock Washer \(2\)](#)  
[\\$0.29 ea. MC: 91113A029 \(100 pack @ \\$2.92\) \\*\\*\\* Use O-Rings instead\\*\\*\\*](#)
- [1/4"-20 Coupling Nut \(1\)](#)  
[\\$0.19 ea MC: 90264A435](#)
- [1/4"-20 Beam Clamp \(1\)](#)  
[\\$1.04 ea. MC: 3044T1](#)
- [C-clamp \(1\)](#)  
[\(various, ~\\$3.00\)](#)
- [Generic Smartphone Camera Adaptor \(1\)](#)  
[Ebay or theglif.com \(for the fancy iPhone 4 model\)](#)

## SUMMARY

If you're familiar with tabletop product photography and video, you know what a pain it can be to shoot those overhead shots while working on something at the same time. Setting up a

tripod so you get the right shot without it getting in the way can be unnerving at best. The remedy for this is usually to bring in a document camera.

The modern equivalent of the overhead projector, a document camera lets you display close-up shots when used with an LCD projector or external monitor. They usually cost between \$500 and \$1500 and are perfectly suited to the task of capturing images of document-sized objects. A thousand dollars for a glorified webcam? OK, it's got a tight focus, clean lighting, and hooks directly up to a projector, but come on, srsly, a grand?

We've all got streaming video on our smartphone now, right? Couldn't we just use that instead? But how do we get it held over the project we're working on without having to work around a tripod? Well, it just so happens that Hollywood grips figured this problem out long ago. Known loosely as a gobo arm and sold commercially under many names, including "Magic Arm", this lightweight mount will help you place your smartphone (webcam, etc.) right down where the action is, without getting in the way. But a commercial unit usually runs between \$100-\$150. And that doesn't include the \$30 clamp you attach it to.

So, for the price of one of those fancy clamps you can piece together your own Mobile Document Camera Stand using easily sourced parts from the local hardware store and online. It's not as fancy as an Elmo Document Camera or Manfrotto "Magic Arm", but it gets the job done, and you can always repurpose the parts for other projects if need arises.

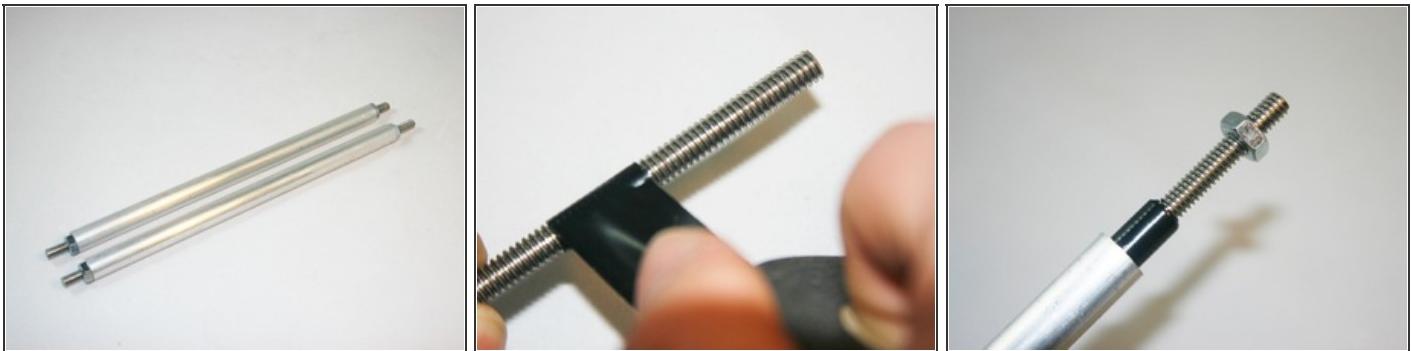
This project is easier than it looks. If you can make small cuts with a hacksaw, you can build this. There's also plenty of room for improvement. Need an extra length or another span? Add it! As a matter of fact, just after I shot these photos, Make Engineering Intern Eric Chu suggested that I use o-rings instead of lock washers. Turns out, they hold the same and act as a variable friction joint. Cool, huh? Now go make one for yourself and see what you can improve.

## Step 1 — Mobile Document Camera Stand



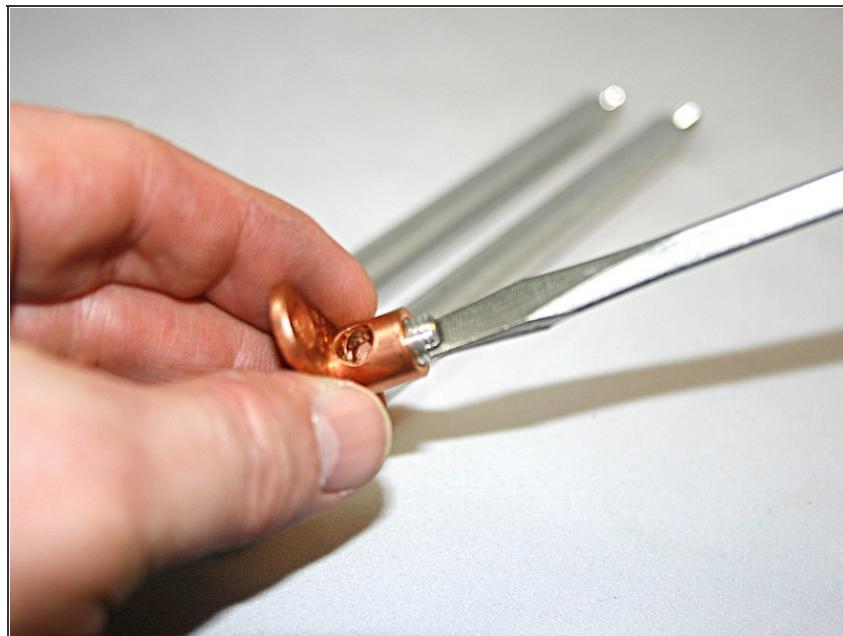
- Measure and cut the threaded rod and aluminum round tube
- Cut two 11.5" pieces of threaded rod
- Cut one 1.75" piece of threaded rod
- Cut two 10" pieces of aluminum round tube
- Use a file to clean up the ends

## Step 2



- Insert threaded rod into aluminum round tube and use hex nuts to hold in place
- Optional: you can use nylon spacers or 8" strips of electrical tape wound around the threaded rod toward each end to position.
- You should have enough rod left at each end to fit into terminal lug.

### Step 3



- Insert ends of threaded rod into terminal lugs and tighten with slotted screwdriver.
- Attach a single terminal lug to one end of the first threaded rod.
- Attach terminal lugs to both ends of the second threaded rod

### Step 4



- Insert end of 1.75" threaded rod into remaining terminal lug
- Thread coupling nut to 1.75" threaded rod
- Attach remaining terminal lug to end and tighten

## Step 5



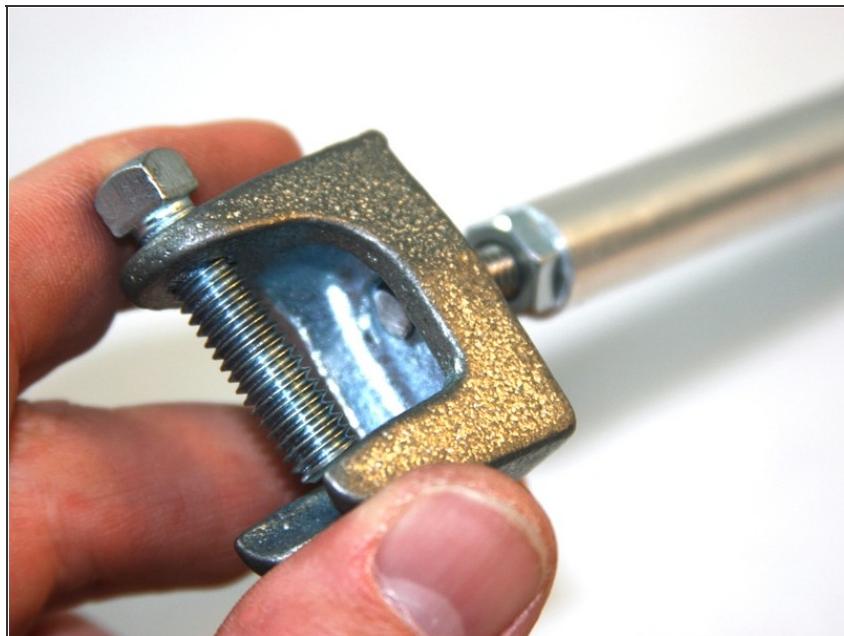
- Assemble the first friction joint
- Insert nylon spacer onto clamping knob shank
- Insert end of terminal lug over nylon spacer, keeping locking screw facing away from tip of shank
- Insert lock washer over terminal lug
- Insert end of terminal lug of second threaded rod over lock washer, keeping locking screw facing towards the tip of shank
- Add optional washer
- Hold together with a 1/4"-20 wing nut

## Step 6



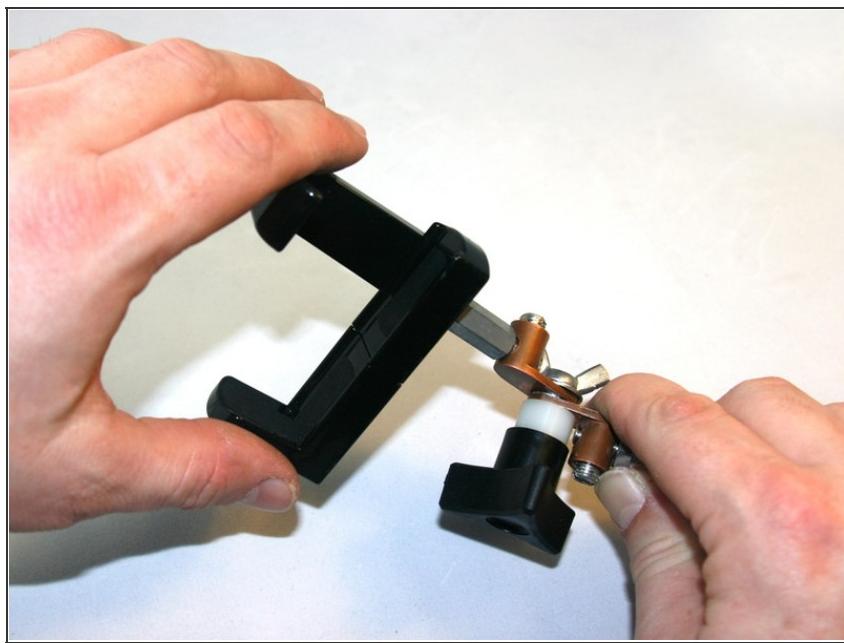
- Assemble the second friction joint
- Follow Step 5 to attach the 1.75" threaded rod assembly to the other terminal lug of second 11.5" threaded rod assembly

## Step 7



- Thread beam clamp onto remaining end of first threaded rod assembly and attach to C-Clamp
- Make sure a little extra allthread sticks through the bottom of the beam clamp. You'll want this overhang to wedge the C-Clamp into so that the beam clamp aligns straight.

## Step 8



- Attach generic smartphone tripod adaptor to 1/4"-20 end of 1.75" threaded rod assembly
- Use coupling nut to adjust for a snug fit.

## Step 9



- Shoot awesome live streaming video.
- Also works well for "Survivorman"-style camera shots.

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